Extron® Electronics
INTERFACING, SWITCHING AND CONTROL

User's Manual

SW DVI Plus Series

DVI Switchers

68-1316-02 **Rev. C**
09 09

Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE *This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.*

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Chapter One

Introduction

About this Manual

About the SW DVI Plus Series

Features

Application Diagrams

Introduction

About this Manual

This manual describes the Extron SW DVI Plus Series switchers and discusses how to install, configure, and operate them.

In this manual, the term "SW DVI Plus Series" refers to all SW DVI Plus models, with or without audio. "Switcher" and "SW DVI Plus" are used interchangeably to refer to any single unit.

The SW DVI Plus Series consists of the following models:

SW2 DVI Plus	SW2 DVI A Plus
SW4 DVI Plus	SW4 DVI A Plus
SW6 DVI Plus	SW6 DVI A Plus
SW8 DVI Plus	SW8 DVI A Plus

The number following SW indicates the number of inputs; "A" indicates an audio product. For example, the SW6 DVI A Plus is a six-input switcher with audio.

About the SW DVI Plus Series

The Extron SW DVI Plus Series are two, four, six, and eight input, one output, single-link Digital Visual Interface (DVI) switchers that select among multiple DVI-D video input signals for one compatible display device. The SW DVI A Plus switchers additionally switch audio signals. All switchers accept and route computer resolutions of up to 1920x1200 or 1080p @ 60 Hz and have pixel bandwidths of up to 165 MHz.

The SW DVI Plus switchers can be controlled via the front panel, the RS-232 interface, or the optional IR 102 Remote Control. You can select inputs by pressing the front panel buttons, enabling auto switching, entering Simple Instruction Set (SIS™) commands via RS-232, or pressing buttons on the IR 102.

NOTE *The SW DVI Plus Series switchers are not compatible with HDCP (High-bandwidth Digital Content Protection) signals. If the display device exhibits a flashing black or blue screen, snow, or other distortion, it may be receiving an HDCP-encrypted signal.*

Features

Auto switching — The SW DVI Plus Series can be configured to automatically switch to the active input when the switcher detects a signal. If multiple input signals are present, the switcher switches to the highest numbered active input.

Signal detection LEDs — Each input is represented by an LED on the front panel. Each LED lights if a signal is present for its input.

Independent input equalization — High or low equalization levels for each input can be selected via the Input EQ DIP switches on the front panel. This reduces the need for additional signal conditioning equipment to compensate for a degraded/poor quality signal.

EDID Minder — EDID (Extended Display Identification Data) consists of a display's resolution, refresh rate, and pixel clock information. The EDID Minder manages this information between the digital output device and all the input sources. By maintaining continuous EDID communication with all input sources, the EDID Minder ensures that all DVI sources power up properly and maintain their video outputs, whether or not they are actively connected to the digital display device through the switcher's output.

Either of the following EDID modes can be selected by SIS commands:

- **Automatic**, in which the SW DVI Plus reads the EDID data when a display is connected and stores the data in memory (default mode)
- **User-assigned**, in which you can assign one of 15 factory-provided files of EDID information to each input. The EDID does not change if a different display device is connected. This mode is useful for trouble-shooting purposes.

Each time power is applied to the output device or the display is replaced, the SW DVI Plus either reads the EDID information from the display or reloads the user-assigned EDID information. It then writes the information to non-volatile memory on the input(s). The input device(s) can read this information as they reboot. (See "EDID modes" in chapter 3, "Operation", for more information.)

Power supply — An external 12 VDC power supply with a 2-pole captive screw connector accepts 100 to 240 VAC.

Rack and furniture mounting — The SW DVI Plus Series can be mounted on a rack shelf or under a desk or podium with an optional mounting kit.

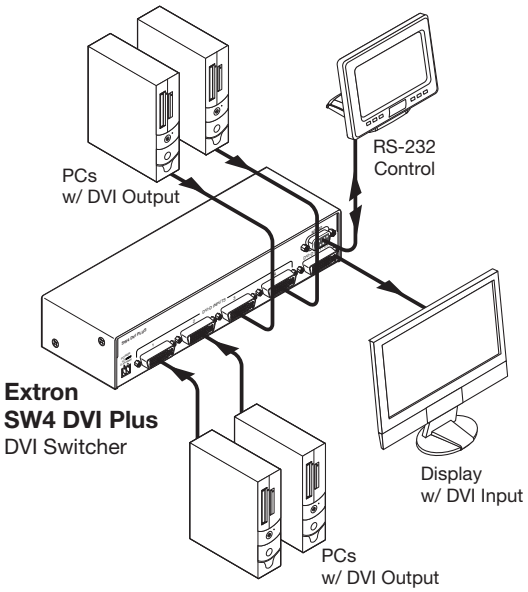
RS-232 control — The switcher can be controlled via SIS commands issued through an RS-232 computer interface.

IR remote control (optional) — The hand-held IR 102 Remote Control can control the SW DVI Plus via infrared signals that it sends to the switcher from a distance of up to 30 feet (9 m).

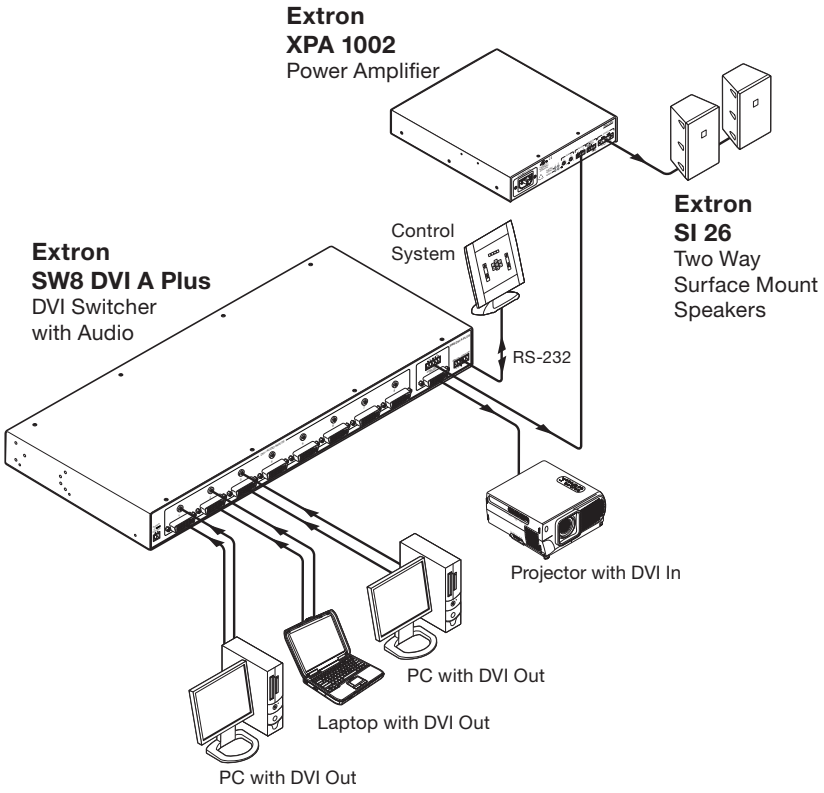
Front panel security lockout (executive mode) — To prevent unauthorized access to the switchers, executive mode can be enabled via the front panel or SIS commands. When the switcher is in executive mode, all front panel controls are disabled (RS-232 and IR control remain available).

Application Diagrams

The following diagrams provide examples of how an SW DVI Plus Series switcher can be connected.



Connection diagram for an SW4 DVI Plus switcher



Connection diagram for an SW8 DVI A Plus switcher

Chapter Two

Installation

Installation Overview

Mounting the SW DVI Plus Series

Rear Panel Features

Wiring the Power Connector

Wiring the DVI-I Video Connectors

Wiring the Audio Connectors (SW DVI A Plus Models)

Wiring for RS-232 Control

Enabling Auto Switching

Installation

Installation Overview

To install and set up the SW DVI Plus switcher,

1. Mount the switcher on a rack shelf or furniture, if desired.
2. Connect input source(s) to one or more SW DVI Plus video input connectors.
3. Connect an output device to the switcher's DVI output connector.
4. (SW DVI A Plus models only) Plug the audio connectors of your input device(s) into the switcher's 3.5 mm TRS audio input jacks.
5. (SW DVI A Plus models only) Wire one of the provided 5-pole captive screw plugs to an audio cable. Connect the cable to your output device's audio input and the switcher's captive screw audio output connector.
6. Wire an RS-232 cable to pins 1, 2, and 3 of one of the provided 5-pole captive screw plugs. Insert this plug into the 5-pole Remote/Auto-SW connector on the switcher's rear panel, and connect the other end of the cable to your computer. (See "Wiring for RS-232 Control", later in this chapter.)
7. (Optional) (All models **except** non-audio SW2 and SW4 DVI Plus) If you want to enable auto switching, use a jumper to connect pins 4 and 5 of the 5-pole captive screw plug that you plugged into the Remote/Auto-SW connector in step 6. (See "Enabling Auto Switching," later in this chapter.)
8. If necessary, wire a 2-pole captive screw connector to the external power supply. (See "Wiring the Power Connector", later in this chapter.)
9. Power on the output display.
10. Connect power to the switcher.
11. Power on the input device(s).

Mounting the SW DVI Plus Series

The SW DVI Plus Series switcher can be set on a table, mounted on a rack shelf, or mounted under a desk, podium, or table.

Tabletop use

Four self-adhesive rubber feet are included with the SW DVI Plus. For tabletop use, attach one foot at each corner on the bottom of the unit, and place the switcher where desired.

Rack mounting

UL rack mounting guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the equipment in a rack.

1. **Elevated operating ambient temperature** — If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — When mounting the equipment in the rack, ensure that uneven mechanical loading does not cause a hazardous condition.

4. **Circuit overloading** — When connecting the equipment to the supply circuit, consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.

5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

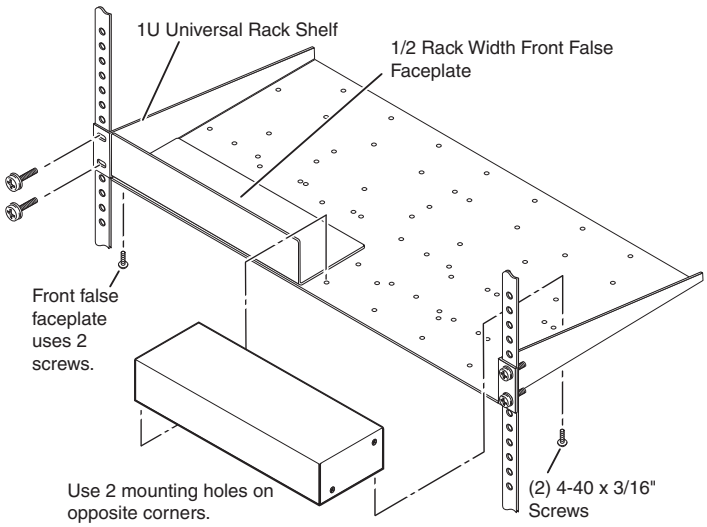
Rack mounting the SW2 DVI Plus and SW4 DVI Plus

For optional rack mounting of the models with enclosures of 8.75 inches wide by 3 inches deep (two-input and four-input models), the following rack shelves are available:

- **RSB 123** — 1U, 3.5" Deep VersaTools® Basic Rack Shelf (part #60-604-20)
- **RSF 123** — 1U, 3.5" Deep VersaTools Rack Shelf Kit (part #60-190-20)
- **RSB 126** — 1U, 6" Deep Basic Rack Shelf (part #60-604-10)
- **RSU 126** — 1U, 6" Deep Universal Rack Shelf Kit (part #60-190-10)
- **RSB 129** — 1U, 9.5" Deep Basic Rack Shelf (part #60-604-01)
- **RSU 129** — 1U, 9.5" Deep Universal Rack Shelf Kit (part #60-190-01)

Mounting on a rack shelf

1. If feet were previously attached to the bottom of the unit, remove them.
2. Mount the switcher on the rack shelf, using two 4-40 x 3/16 inch screws in opposite (diagonal) corners to secure the unit to the shelf (see the figure below).
3. Install blank panel(s) or other unit(s) on the rack shelf as desired.
4. Install the shelf in the rack.

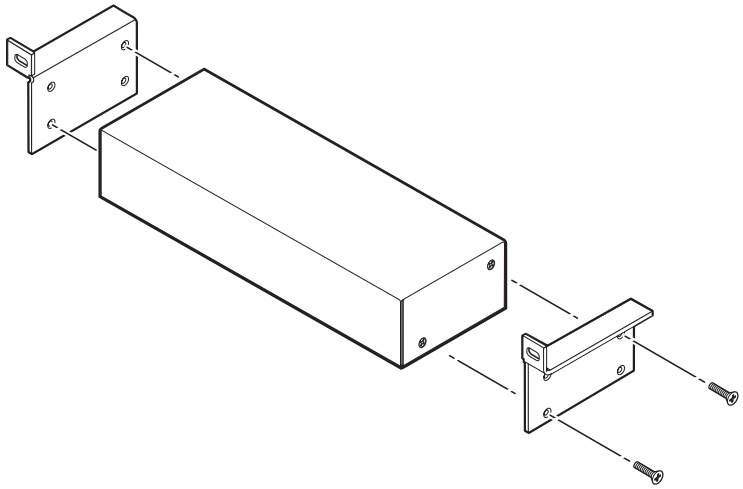

1U Universal Rack Shelf
1/2 Rack Width Front False Faceplate
Front false faceplate uses 2 screws.
Use 2 mounting holes on opposite corners.
(2) 4-40 x 3/16" Screws

Mounting an SW DVI Plus two-input or four-input switcher on a standard 9.5-inch deep rack shelf

Back of the rack mounting

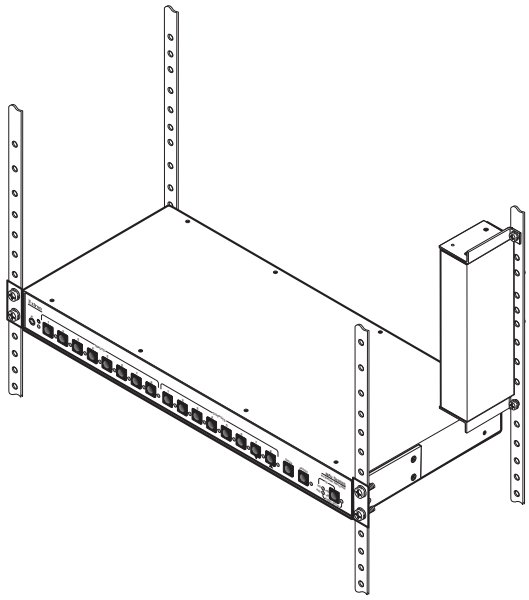
The SW2 DVI Plus and the SW4 DVI Plus can also be mounted vertically to the front or rear rack supports, using the optional MBB 100 Back of the Rack Mounting Kit (part #70-367-01) as follows:

1. If rubber feet were previously attached to the bottom of the unit, remove them.
2. Remove the two screws from each side of the switcher. Retain the screws for possible later reassembly.
3. Attach the brackets to the sides of the unit, using the longer screws included in the mounting kit (see the illustration below).



Attaching the back of the rack mounting brackets to an SW DVI Plus two-input or four-input switcher

4. Mount the switcher to the rack support, using the two included rack screws.

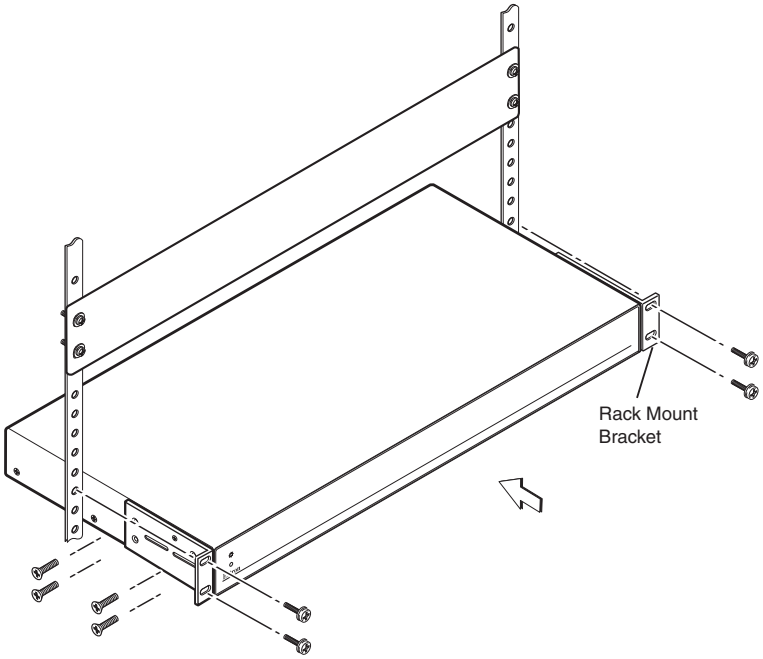


Mounting an SW DVI Plus two-input or four-input switcher to a back of the rack support

Rack mounting the SW6 DVI Plus and SW8 DVI Plus

For optional rack mounting of the models with enclosures 17.5 inches wide by 8.5 inches deep (six-input and eight-input models), use the provided MBD 149 mounting kit (part #70-077-03) as follows:

1. Attach the mounting brackets to the unit, using eight of the machine screws supplied with the mounting kit.



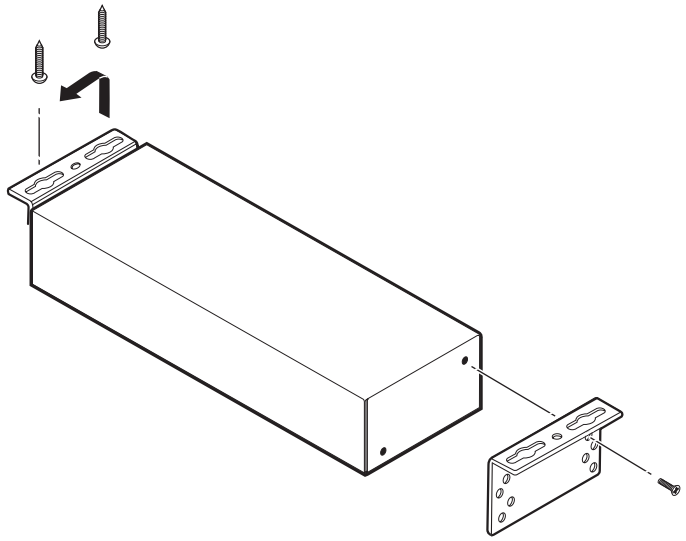
Rack mounting an SW DVI Plus six-input or eight-input switcher

2. Insert the unit into the rack and align the holes in the mounting brackets with the holes in the rack.
3. Use four of the supplied machine screws to attach the brackets to the rack.

Furniture mounting (SW2 and SW4 DVI Plus only)

To mount an SW2 or SW4 DVI Plus switcher under a desk, table, or podium, use the optional VersaTools MBU 123 Mini Under-Desk Mounting Kit (part #70-212-01) as follows:

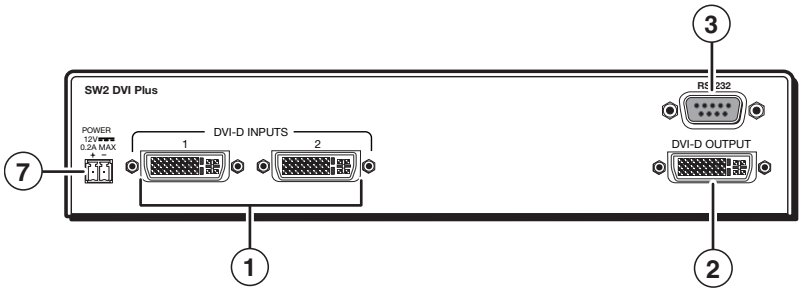
1. If rubber feet were previously attached to the bottom of the unit, remove them.
2. Remove the two screws from each side of the switcher. Retain the screws for possible later reassembly.
3. Attach the brackets to the sides of the unit, using the provided machine screws.



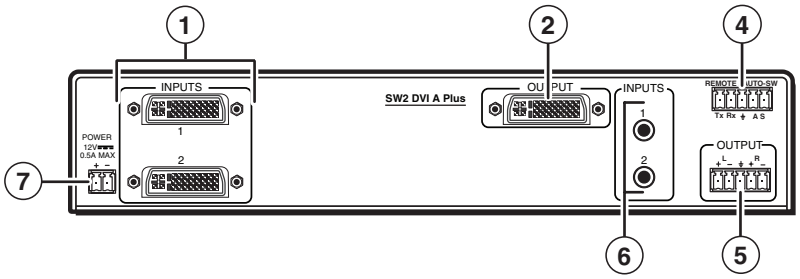
Preparing the SW2/SW4 DVI Plus switcher for under-desk mounting

4. Hold the unit with the attached brackets against the underside of the table or other furniture. On the mounting surface, mark the location of the brackets' screw holes.
5. Drill 3/32 inch (2 mm) diameter pilot holes, 1/4 inch (6.3 mm) deep, into the mounting surface at the marked screw locations.
6. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until slightly less than 1/4 inch of the screw head protrudes.
7. Align the centers of the slots in the brackets with the mounting screws and place the unit against the surface, with the screw heads through the bracket slots.
8. Slide the unit slightly forward or back, then tighten all four screws to secure it in place.

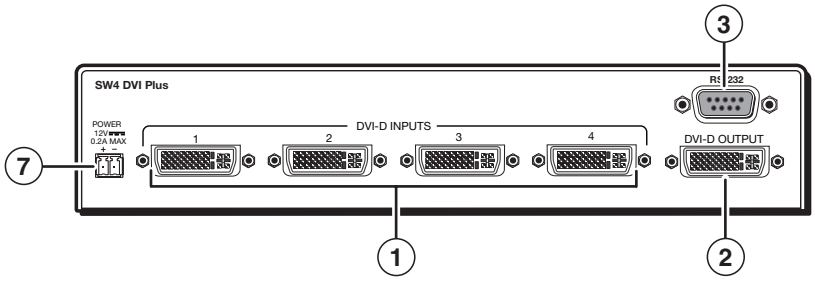
Rear Panel Features



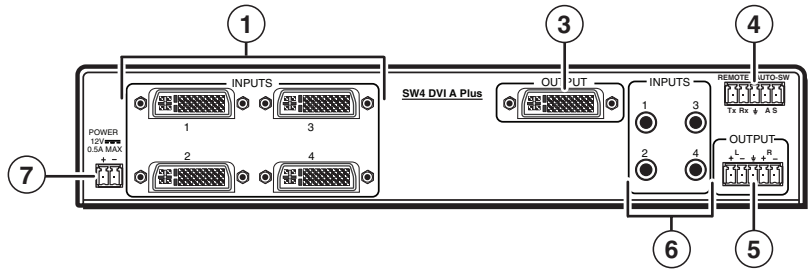
SW2 DVI Plus rear panel



SW2 DVI A Plus rear panel

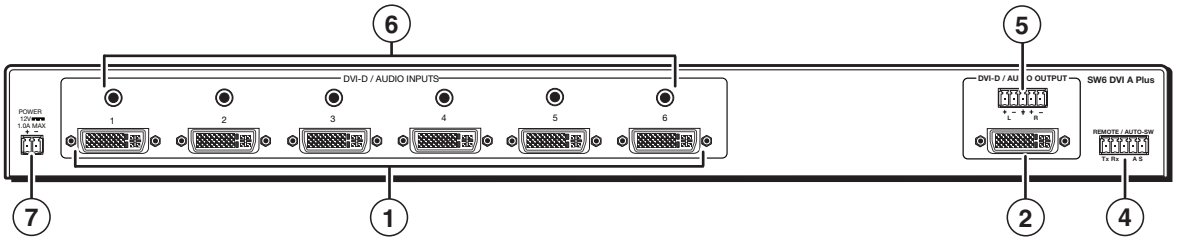


SW4 DVI Plus rear panel

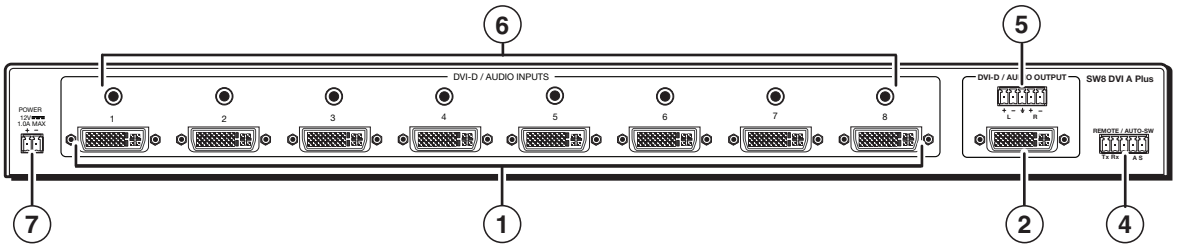


SW4 DVI A Plus rear panel

The following illustrations show the back panels of the SW6 and SW8 DVI A Plus models. The non-audio models of the SW6 and SW8 DVI Plus (not shown) have the same back panels as their audio counterparts, but without audio connectors (⑤ and ⑥).



SW6 DVI A Plus rear panel



SW8 DVI A Plus rear panel

① **Video input connectors** — Connect DVI-D video input devices to these female DVI-I connectors. Only single-link DVI-D signals are supported.

For each of these inputs there is a DIP switch on the front panel to set the input's equalization level, which compensates for weak or noisy signals. (See "Front Panel Features" in chapter 3, "Operation".)

EDID information (display resolution, refresh rate, and pixel clock rate), when read from the output display or entered by a user, is written to NVM (non-volatile memory) on each input, allowing the source to perform as if connected to the display, even when it is switched away from it.

NOTE *If power is recycled to the display, or if a new display is connected, the source may need to be rebooted to read the new EDID.*

NOTE *The SW DVI Plus Series switchers are not compatible with HDCP signals.*

For more information on EDID, see EDID modes in chapter 3, "Operation".

② **Video output connector** — Connect a DVI-D display device to this female DVI-I connector.

If **automatic EDID mode** is enabled, the EDID information is read from the connected output device via this connector and is written to NVM on each input whenever a display is powered on and connected this port.

If **user-assigned mode** is in effect, the information in the assigned EDID file is loaded into NVM when a display is connected and powered on.

NOTE *The EDID information is also read and stored whenever power is recycled to the connected output device or when the output device is replaced.*

③ **RS-232 connector** (SW2 and SW4 DVI Plus non-audio models only) — For RS-232 control, connect your computer's serial port to this 9-pin female D connector. (For more information, see "Wiring for RS-232 Control", later in this chapter.)

④ **Remote and auto switching connector** — This 5-pole, 3.5 mm captive screw connector (labeled "Remote/Auto-SW") can be used for RS-232 communication with the switcher and to enable auto switching.

- **To connect for RS-232 control** on all models except the non-audio SW2 and SW4 DVI Plus, connect the Tx (transmit), Rx (receive) and ⏚ (ground) pins to your computer's serial port. (See "Wiring for RS-232 Control", later in this chapter.)
- **To enable auto switching**, short pins 4 and 5 of this connector together. In auto switch mode, the switcher automatically switches to the highest numbered active input. (See "Enabling Auto Switching", later in this chapter.)

NOTE *The SW2 and SW4 DVI Plus non-audio models do not have this connector. Auto switching on those models is enabled and disabled via an SIS command (see "Input Selection Mode" in the Command/Response table for SIS commands in chapter 4, "Serial Communication and Control".*

⑤ **Audio output connector** (SW DVI A Plus models only) — Connect the audio cable from your output device to this 5-pole, 3.5 mm captive screw connector for balanced (+6 dB) or unbalanced (0 dB) audio. (See "Wiring the Audio Connectors (SW DVI A Plus Models)", later in this chapter.)

NOTE *If the output device is wired for unbalanced audio, the gain is unity. If the output is wired for balanced audio, a +6 dB gain is applied.*

⑥ **Audio input connectors** (SW DVI A Plus models only) — Connect the audio cable(s) from your input source(s) to these 3.5 mm TRS mini jacks for unbalanced stereo audio.

⑦ **Power connector** — Plug the provided external 12 VDC power supply into this 2-pole, 3.5 mm captive screw connector.

Wiring the Power Connector

If using a different external power supply from the one provided with the SW DVI Plus, you may need to wire the power supply's connector as follows:

1. Cut the DC output cord to the length needed.
2. Strip the jacket to expose 3/16 inch (5 mm) of the conductors.

CAUTION *Exposing more than 3/16 inch (5 mm) of the copper wires could allow the stripped wires to touch each other, causing a short circuit. This could result in the external DC power supply overheating and burning.*

Stripping the wires to expose less than the recommended amount may cause them to slide out of the connector too easily, even if they are tightly pinched by the captive screws.

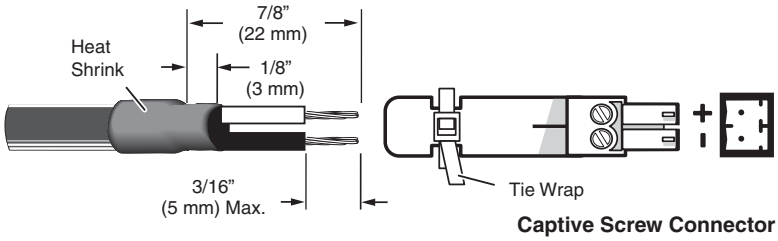
3. Slide the leads into the supplied 2-pole captive screw plug and secure them, using a small screwdriver.
4. To verify the power cord's polarity before connecting it, plug in the power supply with no load and check the output with a voltmeter.

WARNING *The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.*

CAUTION *Do not tin the stripped power supply leads before attaching the captive screw plug to them. Tinned wires are not as secure in the captive screw connectors and can be easily pulled out. They may also break after being bent several times.*

5. Use the supplied tie-wrap to strap the power cord to the extended tail of the connector.

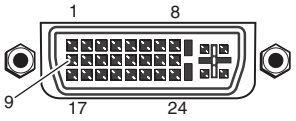
The figure below shows how to wire the connector.



Power connector wiring

Wiring the DVI-I Video Connectors

Wire the DVI-I video input and output connectors as shown in the table below.



Female DVI Connector

Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS data 2–	**9**	TMDS data 1–	**17**	TMDS data 0–
2	TMDS data 2+	**10**	TMDS data 1+	**18**	TMDS data 0+
3	TMDS data 2/4 shield	**11**	TMDS data 1 shield	**19**	TMDS data 0 shield
4	Not used	**12**	Not used	**20**	Not used
5	Not used	**13**	Not used	**21**	Not used
6	DDC clock	**14**	+5 V power	**22**	TMDS clock shield
7	DDC data	**15**	Ground (+5 V)	**23**	TMDS clock+
8	CEC control	**16**	Hot plug detector	**24**	TMDS clock–

NOTE *The connectors on the switcher rear panel are DVI-I. However, the switcher accepts only DVI-D signals.*

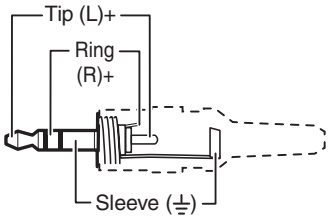
NOTE *Appropriate DVI-D to HDMI cables or adapters are required for HDMI signal input/output.*

Wiring the Audio Connectors (SW DVI A Plus Models)

Wire the audio connectors as shown in the following diagrams.

Audio input

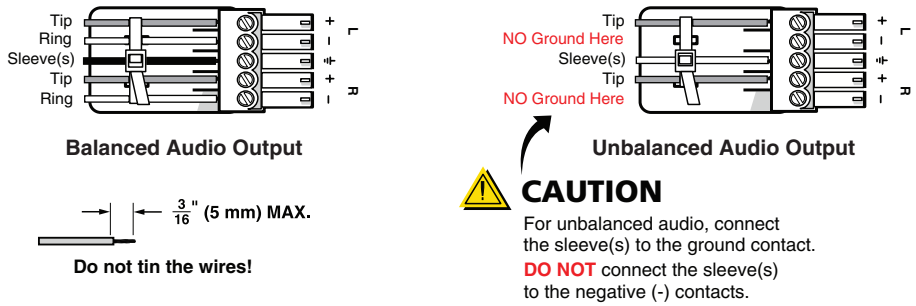
The SW DVI A Plus switchers have two, four, six, or eight 3.5 mm TRS audio input mini jacks for unbalanced stereo audio. Wire the audio connectors as shown below.



Input connector pinout for unbalanced stereo audio

Audio output

The 5-pole captive screw audio output connector is used for both balanced and unbalanced audio. When the connector is wired for unbalanced audio, the gain is unity.



Wiring the audio output connector

Wiring for RS-232 Control

SW2 and SW4 DVI Plus (RS-232 connector)

For RS-232 control of a non-audio SW2 or SW4 DVI Plus, connect a male to female RS-232 cable between the switcher's 9-pin female D RS-232 connector and the computer's serial port. Wire the cable as shown in the table below.

Pin	RS-232 function	Description
1	–	No connection
2	**Tx**	Transmit data
3	**Rx**	Receive data
4	–	No connection
5	**Gnd**	Signal ground
6	–	No connection
7	–	No connection
8	–	No connection
9	–	No connection

Protocol for this port is 9600 baud, 8 data bits, 1 stop bit, no parity.

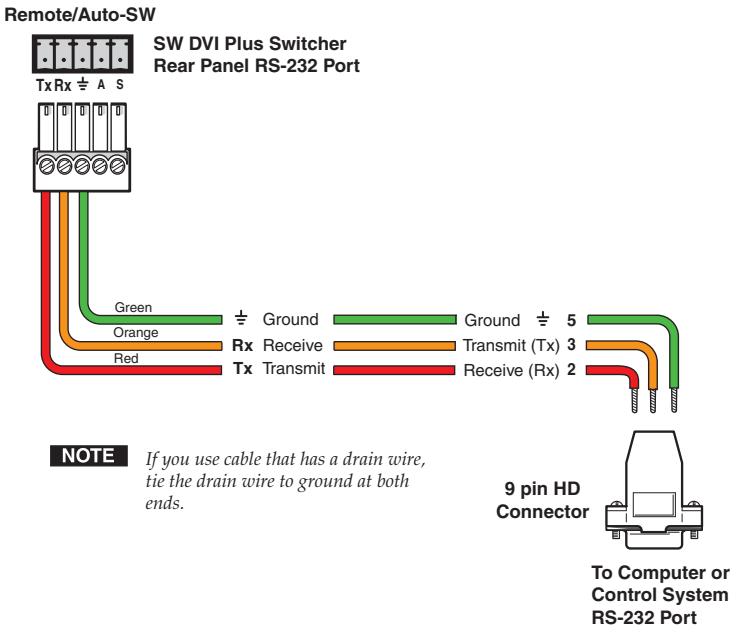
All other models (Remote/Auto-SW connector)

On all models except the non-audio SW2 and SW4 DVI Plus, the 5-pole, 3.5 mm Remote/Auto-SW captive screw connector is used for optional RS-232 communication and to enable auto switching between inputs connected to the switcher.

Use a female 9-pin, D to bare wire RS-232 cable or a universal control cable (UC 50', UC 100', or UC 200') to connect your computer or control system to the RS-232/ Auto-SW connector. One end of the UC cable is terminated with a female 9-pin D connector, and the other end is unterminated.

1. Wire the unterminated end of the RS-232 cable to the provided 5-pole captive screw plug as described below. Connect only the **red**, **orange**, and **green** wires of the cable; and use only the **first three pins** on the connector, starting at the left.
   a. Connect the red wire to pin 1, which plugs into the Tx (transmit) port.
   b. Connect the orange wire to pin 2, which plugs into the Rx (receive) port.
   c. Connect the green wire to pin 3, which plugs into the ground (⏚) port.
2. Plug the 5-pole connector into the Remote/Auto-SW receptacle on the switcher's rear panel.

The following figure shows how to wire this shared connector for RS-232.



Remote/Auto-SW connector pin assignments

Enabling Auto Switching

You can set up the SW DVI Plus to automatically select the active, connected input based on detection of a video sync signal. If two or more inputs are active, the input with the highest number is selected (for example, input 8 on an SW8 DVI Plus switcher). When auto switching is in effect, the green Auto Switch LED on the front panel lights and the front panel input selection buttons are disabled.

NOTE *Audio and video cannot be switched separately when auto switching is enabled.*

SW2/SW4 DVI Plus (non-audio) models

On the non-audio SW2 and SW4 DVI Plus, auto switching is enabled or disabled via the following SIS commands:

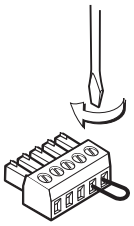
- **1#** selects normal switch mode.
- **2#** selects auto switch mode.

See chapter 4, "Serial Communication and Control", for information on using SIS commands.

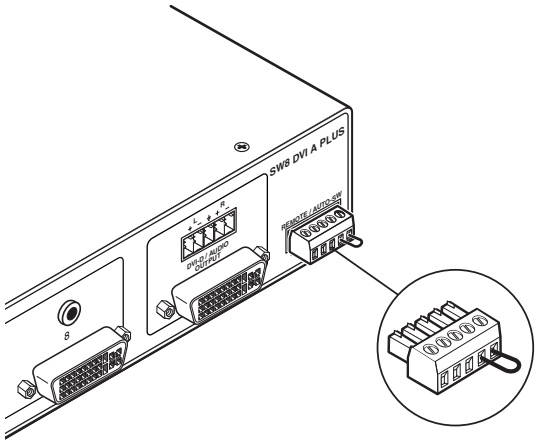
All other models

To enable auto switching on the SW2, SW4, SW6, and SW8 DVI A Plus models and on the SW6 and SW8 DVI Plus non-audio models, follow these steps:

1. Cut a small piece of wire to use as a jumper.
2. Insert the ends of the wire into slots 4 and 5 of the provided 5-pole captive screw plug, connecting pins 4 and 5 together.
3. Use a small screwdriver to tighten the plug's two screws above pin slots 4 and 5, so that the jumper wire ends remain securely in place. (See the illustration at right.)
4. Insert the plug into the 5-pole Auto-SW captive screw connector on the switcher's rear panel.



The following figure shows an SW8 DVI A Plus with a jumper connecting pins 4 and 5 to enable auto switching.



Remote/Auto-SW connector with jumper

Auto switching remains in effect as long as the jumper wire connects the two pins and the 5-pole captive screw plug is attached to the Remote/Auto-SW connector.

Chapter Three

Operation

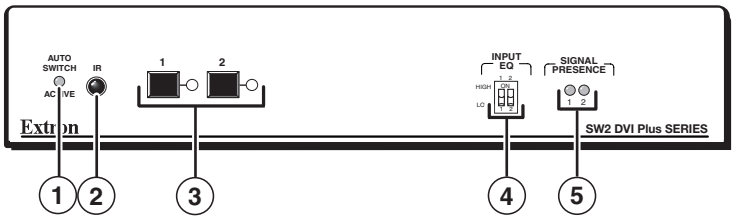
Front Panel Features

Operations

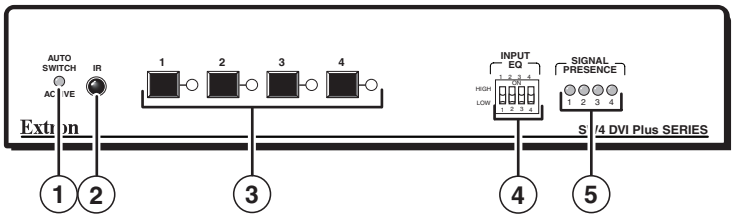
Operation

Front Panel Features

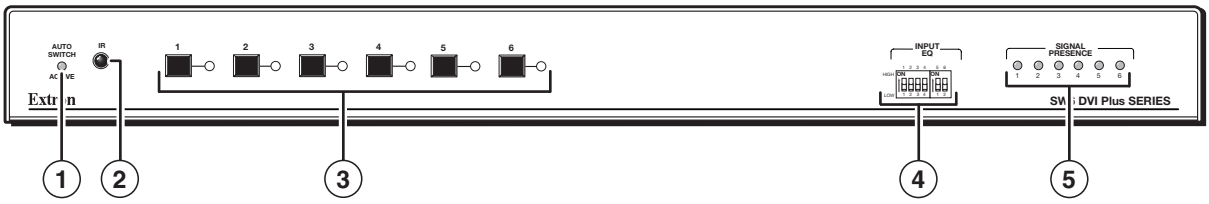
The following front panel illustrations below apply to both the audio and non-audio versions of the SW DVI Plus.



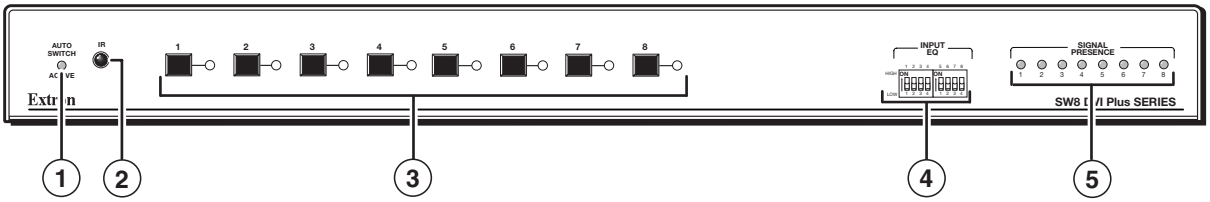
SW2 DVI Plus front panel



SW4 DVI Plus front panel



SW6 DVI Plus front panel



SW8 DVI Plus front panel

1. **Auto Switch Active LED** — This LED lights when auto switching is enabled. See "Enabling Auto Switching" in chapter 2, "Installation," for the procedure to set up auto switching.
2. **IR receiver port** — This sensor detects IR signals from the optional IR 102 remote control at a distance of up to 30 feet and within 40 degrees off the axis. (See "Using the optional IR 102 remote control", later in this chapter, for more information.)
3. **Input Selection buttons and LEDs** — Press these buttons to select inputs 1 through 2, 4, 6, or 8, depending on your model. The LED at the right of each button lights when the corresponding input is selected. (These buttons are disabled if Auto switch is in effect; however, the LEDs continue to light to indicate the input selection.)

④ **Input EQ DIP switches** — These DIP switches (one for each input) set the equalization for the corresponding input. (See "Setting equalization for input sources", later in this chapter.)

⑤ **Signal Presence LEDs** — Each of these LEDs lights when a signal is present on the corresponding input.

Operations

Powering on the switcher

Follow these steps to power on the SW DVI Plus:

1. Connect all input and output devices to the switcher's rear panel connectors. (See "Rear Panel Features" in chapter 2 for information on the rear panel connections.)
2. Power on the display.
3. Plug the power supply into the 2-pole captive screw power connector on the rear panel.
   - The unit performs a self-test, during which the front panel Auto Switch and Input LEDs each blink once in sequence from left to right. If the self-test completes with no errors, the LED for the most recently selected input remains lit.
   - The switcher reads the available EDID information from either the connected output device or the user's specifications and writes it to non-volatile memory on each input.

NOTE *The EDID information is also read and stored again whenever power is recycled to the output device or the output device is replaced. You must reboot your computer and other input devices in order for them to read new information.*

4. Power on the input devices.

Selecting an input

To switch an input to the output, press the desired input's button on the front panel (ensure that Auto Switch is not enabled). The LED corresponding to the selected input button lights.

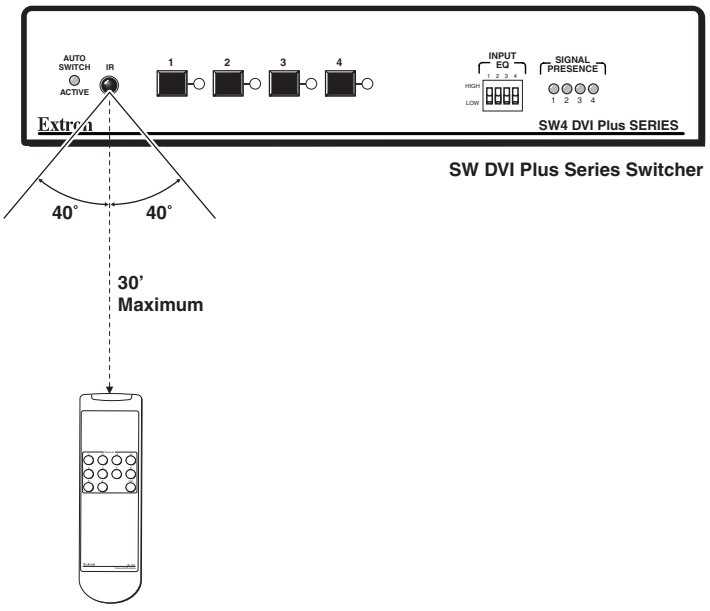
- To determine the current configuration, check the front panel input LEDs. The one that is lit indicates the selected input. The LED remains lit until a new input is selected.
- Only one input can be switched to the output at a time.
- When only audio is selected for an input via SIS command (audio breakaway), the LED for the selected input flashes. (See the "Select audio input only" command in the Command/response table for SIS commands, chapter 4.)

Other ways to select an input include using SIS commands (see chapter 4, "Serial Communication and Control,") or optional IR remote control (see "Using the optional IR 102 remote control," in the next section). Front panel input selection is disabled when auto switching is in effect.

Using the optional IR 102 remote control

The optional hand-held IR 102 Remote Control (part #70-224-10) lets you remotely perform functions that are also available through the front panel buttons and SIS commands.

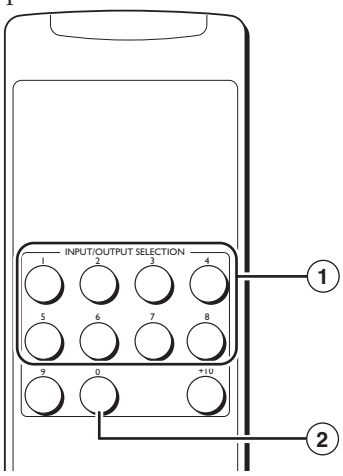
The IR receiver port on the front panel is located to the right of the Auto Switch Active LED. It receives signals from the remote control if they are sent from within a 40-degree arc to the right or left of direct line of sight between the remote control and the switcher's receiver, and from no more than 30 feet (9 m) away. (See the illustration below.)



Area for remote signal reception

Remote control buttons

On the IR 102 remote control, buttons 1 through 2, 4, 6, or 8 (depending on your model) select inputs. Button 0 mutes (deselects) all inputs.



① **Input Selection buttons** — Press one of these buttons to select an input.

② **Input Mute button (0)** — Press this button to deselect all inputs, effectively muting the output.

Locking IR remote access

The SW DVI Plus can be set to lock out users from using the IR 102 Remote Control to control the switcher. Remote access can be enabled and disabled via SIS commands (see "IR receiver disable from front panel" in the Command/response table for SIS commands in chapter 4). When remote access is set to Off, all switcher controls remain available through the SW DVI Plus front panel.

Enabling front panel lockout (executive mode)

Executive mode disables all front panel controls, locking out the user from those functions. Putting the switcher in this mode enhances security by protecting against inappropriate or accidental changes to settings. When the switcher is in executive mode, RS-232 and IR control remain available.

To lock or unlock the front panel, press and hold Input buttons 1 and 2 simultaneously for 3 seconds, then release. The front panel LEDs blink three times, indicating that executive mode has been enabled or disabled. (See the illustration below.)

Enabling or disabling executive mode

Setting equalization for input sources

The front panel contains a set of Input EQ DIP switches, one for each of the switcher's inputs. High and low equalization levels for each input are selected via these switches. Setting them to High (up) compensates for a degraded or poor quality signal, reducing the need for additional signal conditioning equipment.

If the input signal is strong, set the switches to Low (down).

EDID modes

The EDID Minder on the SW DVI Plus switchers communicates information about the connected display to each source device that is plugged into one of the switcher's input ports, whether or not the source is selected. EDID (extended display identification data) information consists of the display's resolution, refresh rate, and pixel clock rate. By factory default, the EDID stored on all inputs contains information for a native resolution of 1024 x 768 @ 60 Hz.

The EDID information can be communicated in two modes: automatic and user-assigned.

Automatic mode

In automatic mode, the switcher automatically detects EDID information about the connected display and communicates it to the input devices. This is the default mode.

- **Reading and storage process** — Each time a display is connected to the DVI output while the power is connected, the SW DVI Plus reads the display's EDID information and stores it at each input. This information is retained after the display is disconnected; however, it is overwritten if a new display is connected or a user assigned EDID file is selected.
- **Default EDID** — When the switcher is in automatic mode, the default EDID (1024 x 768 resolution) is stored at each input until a display is connected, at which time it is overwritten.

User-assigned mode

In this mode, you can select a file of EDID information that is stored on the switcher. The selected EDID is stored at the inputs and is not overwritten; the switcher does not automatically obtain EDID information from the display.

You may want to use this mode if there is a problem with automatic communication of the EDID information from the attached display, and you want to ensure that the correct information is stored on the inputs. Also, because this mode disables automatic EDID reading and storage, you can retain one set of EDID information on the inputs and not have it changed when another display is connected.

- **Factory-loaded EDID files** — A user can select from a list of 15 EDID files that are loaded on the switcher at the factory. Each EDID file contains a unique native resolution. The table below shows the EDID files that are provided with the switcher.

	Native resolution	Refresh rate
1	800 x 600	60 Hz
2	1024 x 768	60 Hz
3	1280 x 1024	60 Hz
4	1280 x 800	60 Hz
5	1360 x 768	60 Hz
6	1366 x 768	60 Hz
7	1440 x 900	60 Hz
8	1400 x 1050	60 Hz
9	1680 x 1050	60 Hz
10	1600 x 1200	60 Hz
11	1920 x 1200	60 Hz
12	1280 x 720 (720p60)	60 Hz
13	1920 x 1080 (1080p60)	60 Hz
14	1280 x 720 (720p50)	50 Hz
15	1920 x 1080 (1080p50)	50 Hz
16	User-loaded	

- **User-loaded EDID file** — In addition to the 15 EDID files provided with the switcher, an empty location (16) is provided to which a user can save the EDID data of the display that is currently connected to the switcher's output port. This sixteenth file can then be selected as one of the user-assigned EDID files.

Changing the EDID mode

EDID modes can be switched only by SIS command. By default, the SW DVI Plus is in automatic EDID mode. To change between auto mode and user-assigned mode, enter the following SIS command:

Esc A * X5 EDID ←

where X5 is 0 (automatic mode) or the number of the user-assigned EDID file that you want to select (1 through 16). (See chapter 4, "Serial Communication and Control", for instructions for entering SIS commands via RS-232.)

NOTE *The switcher remains in the selected EDID mode after power is recycled. If the unit is reset to factory defaults, it reverts to automatic mode.*

Resetting

To reset the switcher to its factory default settings, follow these steps:

1. Press and hold the Input 1 button while power is being applied to the unit.
2. Continue holding the Input 1 button until the power-up sequence completes.

NOTE *Resetting restores the EDID mode to automatic, with a resolution of 1024x768 @ 60 Hz. If a display is connected at the time of the reset, its EDID information is detected and stored at the inputs.*

Chapter Four

Serial Communication and Control

Using Simple Instruction Set (SIS) Commands

Universal Switcher Control Program

Updating Firmware Using Firmware Loader

Serial Communication and Control

Using Simple Instruction Set (SIS) Commands

The SW DVI Plus can be remotely set up and controlled via a host computer or other device (such as a control system), attached to the rear panel Remote/Auto-SW port, using the Extron Simple Instruction Set (SIS) commands. See "Enabling Auto Switching" in chapter 2, "Installation", for information on connecting to this port.

Host-to-switcher communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. You can enter these commands from your computer using a communication software program such as HyperTerminal. When the switcher determines that a command is valid, it executes the command and sends a response to the host device.

Most responses from the SW DVI Plus to the host computer end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Switcher-initiated messages

When a local event such as a front panel selection takes place, the switcher responds by sending a message to the host, indicating what selection was entered. No response is required from the host.

The following switcher-initiated message is displayed:

(C) Copyright 2009, Extron Electronics SW DVI Plus Series, Vx.xx, 60-xxx-xx

The switcher sends the copyright message when it first powers on. Vx.xx is the firmware version number; 60-xxx-xx is the part number.

NOTE *This message is displayed only at power-up.*

Error responses

If the switcher is unable to execute a command it receives because the command is invalid or contains invalid parameters, the switcher returns an error response to the host. Error response codes and their descriptions are as follows:

E01 – Invalid input channel number (out of range)

E06 – Invalid input selection during auto switch

E10 – Invalid command

E13 – Invalid value (out of range)

Using the command/response table

The command/response table on the following pages lists valid ASCII and hexadecimal command codes, the switcher's responses to the host, and a description of the command's function or the results of executing the command.

The ASCII to HEX conversion table below is for use with the command/response table.

ASCII to HEX Conversion Table																			
	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

Esc	1B
CR	ØD
LF	ØA

ASCII to Hex conversion table

Symbol definitions

↵ = CR/LF (carriage return/line feed) (hex 0D 0A)

← = Soft carriage return (no line feed)

• = Space

Esc = Escape key

X1 = Input number
- 0 through the maximum number of inputs on the unit
- 0 = deselect all inputs

X2 = On/off and signal status
- 0 = Off/signal not present
- 1 = On/signal present

X3 = Firmware version (to two decimal places)

X4 = Switch mode
- 1 = normal switch mode
- 2 = auto switch mode

X5 = EDID mode/file selection
- 0 = automatic mode (no EDID file selected)
- 1-15 = factory-loaded EDID file number (For a description of available EDID files, see the "EDID Minder" section on page 4-5.)
- 16 = User-assigned (EDID for the current display)

X6 = Current EDID information in hexadecimal

NOTE *Unless otherwise indicated, commands are* ***not*** *case sensitive.*

Command/response table for SIS commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Input selection			
Select video and audio input	X1 !	In X1 • All ↵	Select audio (if available) and video input X1. X1 = input number 0 through highest number of inputs on the switcher. 0 = deselect all inputs
Select video input only	X1 &	In X1 • Vid ↵	Select video input X1 (audio models only). 0 = deselect all inputs
Select audio input only	X1 $	In X1 • Aud ↵	Select audio input X1 (audio models only). 0 = deselect all inputs When audio is broken away, the LED for the selected audio input flashes.
Input selection mode			
Enable/disable auto switch mode	X4 #	F X4 ↵	(Non-audio SW 2/4 DVI Plus models only) Automatically select the connected, active input. X4 = input selection mode. For X4: 1 = normal switch mode 2 = auto switch mode
Input video signal sensing			
Request status of all inputs	0LS	Sig X2 • X2 ... X2 ↵	Show the presence or absence of a signal at each input. Inputs are shown in numerical order. X2 = input signal status. For X2: 1 = signal present 0 = signal not present **NOTE** *This command is case-sensitive.*
Request status of an individual input	X1 LS	X2 ↵	**NOTE** *This command is case-sensitive.*
Video output muting			
Video output mute	X2 B	Vmt X2 ↵	Mute the video output signal.
Read video output mute	B	X2 ↵	Show video output muting status X2. For X2: 1 = muted 0 = unmuted
Audio output muting			
Audio output mute	X2 Z	Amt X2 ↵	Mute the audio output signal (audio models only).
Read audio output mute	Z	X2 ↵	Show audio output muting status X2. For X2: 1 = muted 0 = unmuted

Command/response table for SIS commands, continued

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
EDID Minder			
Assign EDID to inputs	Esc A * X5 EDID ←	Edid A X5 ↵	Select an EDID file for all inputs. X5 = EDID file location number (see below): 0 = Automatic mode (default): EDID of connected display is detected and passed to the inputs. 1 = 800x600 @ 60 Hz 2 = 1024x768 @ 60 Hz (default) 3 = 1280x1024 @ 60 Hz 4 = 1280x800 @ 60 Hz 5 = 1360x768 @ 60 Hz 6 = 1366x768 @ 60 Hz 7 = 1440x900 @ 60 Hz 8 = 1400x1050 @ 60 Hz 9 = 1680x1050 @ 60 Hz 10 = 1600x1200 @ 60 Hz 11 = 1920x1200 @ 60 Hz 12 = 1280x720 @ 60 Hz 13 = 1920x1080 @ 60 Hz 14 = 1280x720 @ 50 Hz 15 = 1920x1080 @ 50 Hz 16 = User-loaded
Example:	EscA*9EDID←	Edid A 09 ↵	Select EDID file #9 (1680x1050 @ 60 Hz) to be stored at the inputs.
View EDID assignment	Esc A * EDID ←	X5 ↵	Show the number of the EDID file currently assigned to the inputs.
View EDID in Hex	Esc R * EDID ←	X6 ↵	View the current EDID assignment in hexadecimal (256 bytes). X6 = current EDID information in hex
Save display EDID to user location	Esc S * EDID ←	Edid S ↵	Store the EDID of the connected display as the user-assigned EDID file #16.
Front panel lockout			
Enable/disable executive mode	X2 X	Exe X2 ↵	For X2: 1 = front panel locked 0 = front panel unlocked (default)
View lockout status	X	X2 ↵	Show executive mode on/off status.
IR receiver disable from front panel			
Enable/disable IR receiver	X2 * 65#	IRDisable X2 ↵	Disable the IR remote receiver on the front panel from receiving signals from the IR remote control.
View IR disable status	65#	X2 ↵	View IR receiver status. For X2: 0 = IR Disable feature is off (IR is enabled). (default) 1 = IR Disable feature is on (IR is disabled).

Command/response table for SIS commands, continued

Command	ASCII Command (host to unit)	Response (unit to host)	Additional description
Firmware version, part number, and information requests			
Request information	I	V X1 • A X1 • F X4 • Vmt X2 • Amt X2 ↵	Show the selected video inputs, audio inputs (audio models only), switch mode, video muting status, and audio muting status (audio models only). X1 = input number: 1 through highest number of inputs available. 0 = all inputs muted. X2 = muting status: 1 = muted 0 = unmuted X4 = switch mode: 1 = normal switch mode 2 = auto switch mode
Example:	I	V6 A6 F2 Vmt0 Amt0 ↵	On an SW6 DVI A Plus, video input 6 and audio input 6 are selected, auto switch mode is enabled, and neither the video nor the audio is muted.
Request part number	N	60-xxx-xx ↵	Show the switcher's part number. (See "Included parts" in appendix A for model part numbers.)
Query firmware version	Q	X3 ↵	Show firmware build number X3, expressed to the second decimal place.
Example:	Q	1.01 ↵	
Query EQ DIP switch status	41S	Dip X2 • X2 ... X2 ↵	Show equalization on/off status for all inputs (inputs are shown in numerical order). X2 = Input EQ DIP switch setting: 1 = on (up) 0 = off (down) **NOTE** *This command is case-sensitive.*
Example:	41S	Dip 1 1 0 0↵	On an SW4 DVI Plus, the Input EQ equalization DIP switches for inputs 1 and 2 are set to On; the DIP switches for inputs 3 and 4 are set to Off.
Query auto switch status	72#	Asw X2 ↵	Show on/off status of auto switching. For X2: 0 = disabled 1 = enabled
Reset			
Reset	Esc ZXXX ←	Zpx ↵	Reset the switcher to factory default values. EDID is set to 1024x768 @ 60 Hz.
Upload firmware			
Upload firmware	Esc Upload ←	...go Upl ↵	Upload a new firmware version from the computer. "Upl" appears after upload is complete.

Universal Switcher Control Program

The Windows®-based Extron Universal Switcher Control Program, which communicates with the switcher via the RS-232 port (non-audio SW2 and SW4 DVI Plus) or the Remote/Auto-SW port (all other models), provides an alternative way to configure and operate the SW DVI Plus switcher. The program is compatible with Windows 2000 and Windows XP or higher versions.

Installing the software

The control program is contained on the Extron Software Products disk. Install the software as follows:

1. Insert the disk into the drive. The installation program should start automatically. If it does not self-start, run Launch.exe from the disk. The Extron software disk window appears.
2. Click the **Software** button.

Extron Electronics
The Extron Software DVD Issue 2009.1
800.633.9876
Products
Software
Drivers
Firmware
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Home
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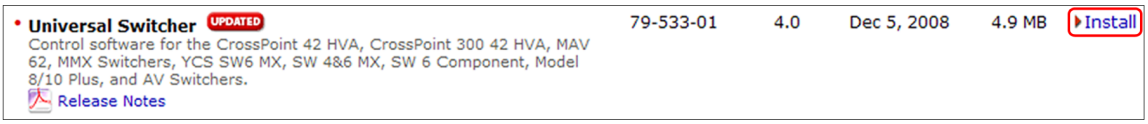
<click to select product>
List Part Numbers
What's New Since Last Issue
www.extron.com
For the latest product information, visit www.extron.com
The Extron Software DVD Issue 2009.1
For more than 25 years, Extron Electronics has manufactured professional A/V system products, including computer-video interfaces, switchers, matrix switchers, distribution amplifiers, signal processing devices, Ethernet control interfaces, and high resolution cable. Extron offers solutions for integration of video and audio into presentation systems for a variety of environments, such as boardrooms, classrooms and training centers, lecture halls, command and control centers, and more.
Products
Find a product, and view available files.
Software
Install control and configuration software.
Drivers
Install drivers.
Firmware
Install firmware.
Get viewers & utilities here

Software disk window

3. Scroll to the Universal Switcher Control program and click the **Install** link at right.


Universal Switcher
UPDATED
Control software for the CrossPoint 42 HVA, CrossPoint 300 42 HVA, MAV 62, MMX Switchers, YCS SW6 MX, SW 4&6 MX, SW 6 Component, Model 8/10 Plus, and AV Switchers.
Release Notes
79-533-01
4.0
Dec 5, 2008
4.9 MB
Install

Universal Switcher Control software link on disk

4. Follow the on-screen instructions to install the software on your computer. By default, the installation of the Universal Switcher Control Program creates a directory at c:\Program Files\Extron\UnivSW, and it places four icons into a group folder named "Extron Electronics\Universal Switcher."

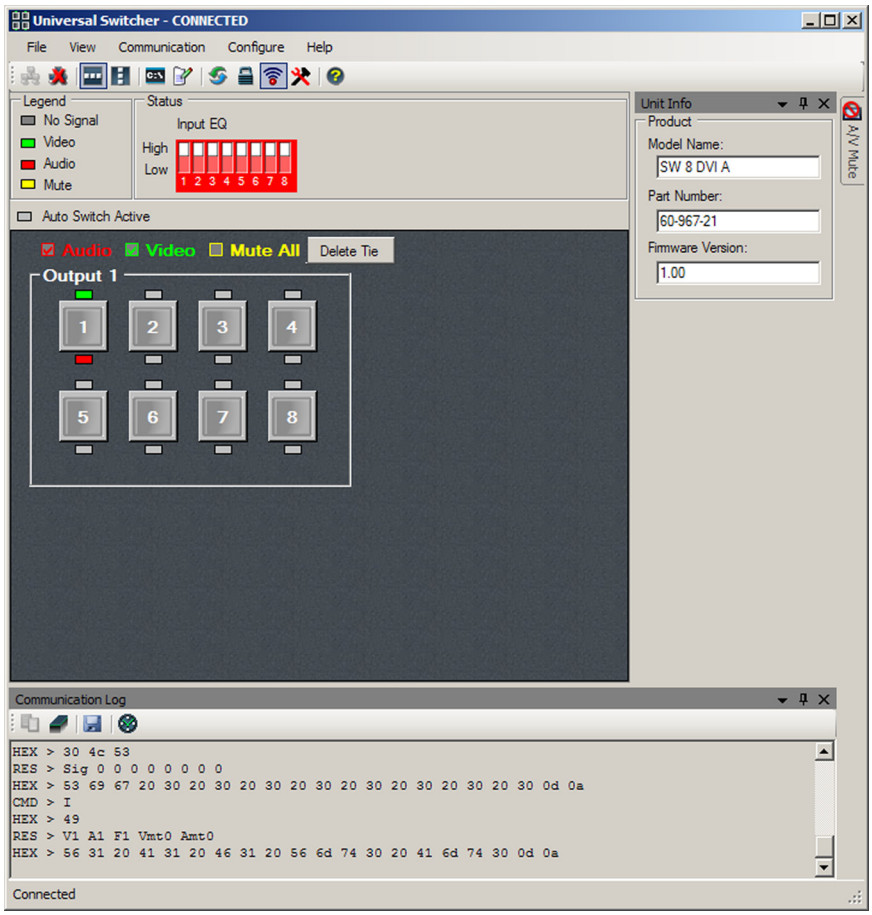
   The four installed icons are:

   - Check for Universal Switcher Updates
   - Uninstall Universal Switcher
   - Universal Switcher Control Program
   - Universal Switcher Help

Using the software

Run the program as follows:

1. On your desktop Start menu, click **Start** > **All Programs** > **Extron Electronics** > **Universal Switcher** > **Universal Switcher Control Program**.
2. Select the comm port that is connected to the switcher's RS-232 port.
3. The Extron Universal Switcher Control Program window displays the selected video and audio input.



Universal Switcher Control program window

Using the help system

For information on how to use the Universal Switcher control program and explanations of its features and functions, access the help program using any of the following methods:

- On your desktop Start menu, click **Start** > **All Programs** > **Extron Electronics** > **Universal Switcher** > **Universal Switcher Help**.
- From within the switcher control program, select **Help** > **Contents** on the task bar.
- With the switcher control program open, press the F1 key.

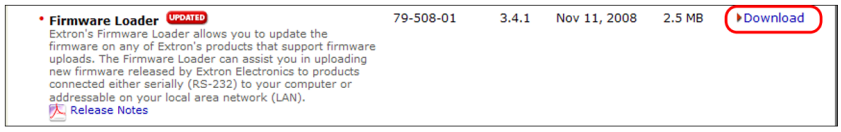
Updating Firmware Using Firmware Loader

Updates to the SW DVI Plus Series firmware are made available periodically via the Extron Web site. You can find out what version of firmware is currently loaded on your switcher by entering the SIS "Q" command via the RS-232 interface. See chapter 4, "Serial Communication and Control", for the procedure for entering SIS commands.

Downloading and installing the Firmware Loader

Extron recommends using the Firmware Loader software to update the firmware on the SW DVI Plus. If you do not already have the Firmware Loader software installed on your computer, download it as follows:

1. Go to the Extron Web site at www.extron.com and click the **Download** tab.
2. On the Download Center screen, click the **Software** link on the left sidebar menu.
3. On the next Download Center screen, locate and click the **Download** link for the Firmware Loader.


Firmware Loader
UPDATED
Extron's Firmware Loader allows you to update the firmware on any of Extron's products that support firmware uploads. The Firmware Loader can assist you in uploading new firmware released by Extron Electronics to products connected either serially (RS-232) to your computer or addressable on your local area network (LAN).
Release Notes
79-508-01
3.4.1
Nov 11, 2008
2.5 MB
Download

4. On the next screen, enter the requested information, then click the **Download fw_loader*n*x*n*x*n*.exe** button (where *n* is the Firmware Loader version number).
5. Follow the instructions on the rest of the download screens to save the executable Firmware Loader installer file to your computer. Note the folder to which you saved the file.
6. In Windows Explorer or another file browser, locate the downloaded executable installer file, and double-click it to open it.
7. Follow the instructions on the Installation Wizard screens to install the Firmware Loader on your computer. Unless you specify otherwise, the installer program places the Firmware Loader file, "FWLoader.exe", at c:\Program Files\Extron\FWLoader.

Downloading the SW DVI Plus firmware

To obtain the latest version of firmware for your SW DVI Plus, follow these steps:

1. Visit the Extron Web site (www.extron.com), click the **Download** tab, then click the **Firmware** link on the left sidebar menu.

Firmware link on the Download tab

2. On the next Download Center screen, click the SW DVI Plus Series **Download** link.
3. On the next screen that appears, enter the requested user information, then click the **Download** button.
4. Follow the instructions on the rest of the download screens to save the executable firmware file to your computer. Note the folder to which you saved the file.
5. In Windows Explorer or another file browser, locate the downloaded executable file, and double-click it to open it.
6. Follow the instructions on the Installation Wizard screens to install the new firmware on your computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Loading the firmware to the switcher

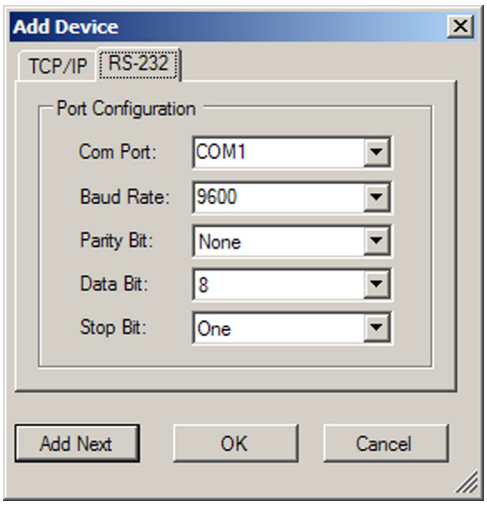
To load a new version of firmware to the switcher using the Firmware Loader software, connect your computer's serial port to the switcher's 9-pin RS-232 connector (non-audio SW2 and SW4 DVI Plus) or to the first three pins of the switcher's Remote/Auto-SW serial port (all other models). See "Wiring for RS-232" in chapter 2, "Installation," for information on connecting to the serial port.

1. If you have not already done so, download and install the Firmware Loader executable installer file to your computer (see "Downloading and installing the Firmware Loader," earlier in this chapter).
2. If necessary, download the latest SW DVI Plus firmware version and install it on your computer (see "Downloading the SW DVI Plus firmware," above).
3. Open the Firmware Loader via your desktop Start menu by making the following selections:

   Start > **All Programs** > **Extron Electronics** > **Firmware Loader** > **Firmware Loader**

   The Firmware Loader window opens with the Add Device window displayed in front of it.

4. On the Add Device window, select the **RS-232** tab.



Add Device window, RS-232 tab

NOTE *Although the screen also has a **TCP/IP** tab, the SW DVI Plus does not have a LAN port. Do not select the **TCP/IP** tab.*

5. From the drop-down menus on this tab, select the appropriate port configuration parameters (obtained from your system administrator). The defaults are shown in the illustration above (9600 baud, no parity, 8 data bits, and one Stop bit).

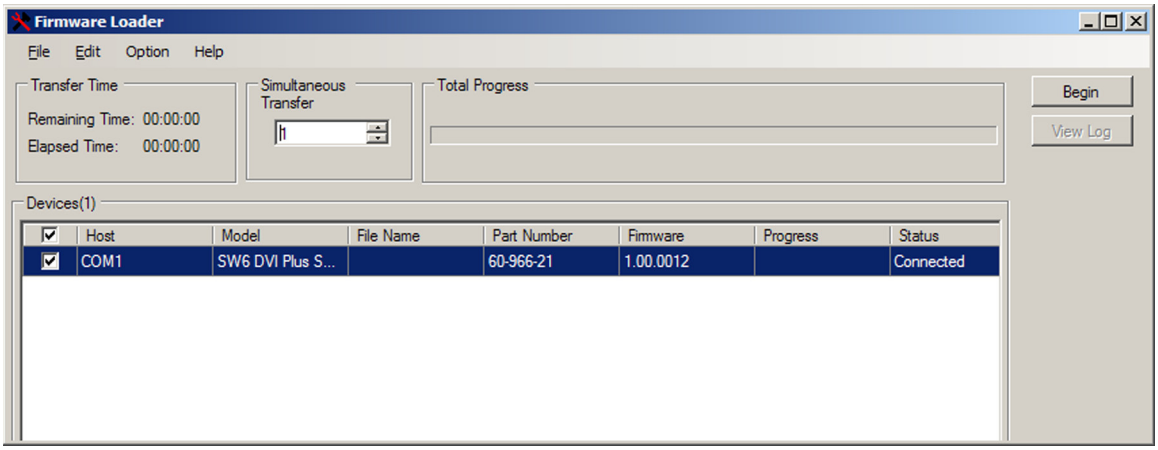
6. If you will be uploading the firmware to multiple SW DVI Plus switchers, do the following:

   a. Click **Add Next**. Your first device is added to the Devices field in Firmware Loader window, and the Add Device window remains open.

   b. Enter the connection information for the device that you added.

   c. Repeat steps **a** and **b** until all desired devices have been added to the Firmware Loader window.

7. When finished adding devices, click **OK**. The Add Device window closes, leaving the Firmware Loader window open with the added SW DVI Plus device(s) highlighted and selected.



Firmware Loader screen with an SW DVI Plus added

8. If you want to remove a device from the Devices field, do the following:

   a. Click on the name(s) of the device(s) to be deleted, to highlight them.

   b. Select **Remove Selected Device(s)** from the Edit menu.

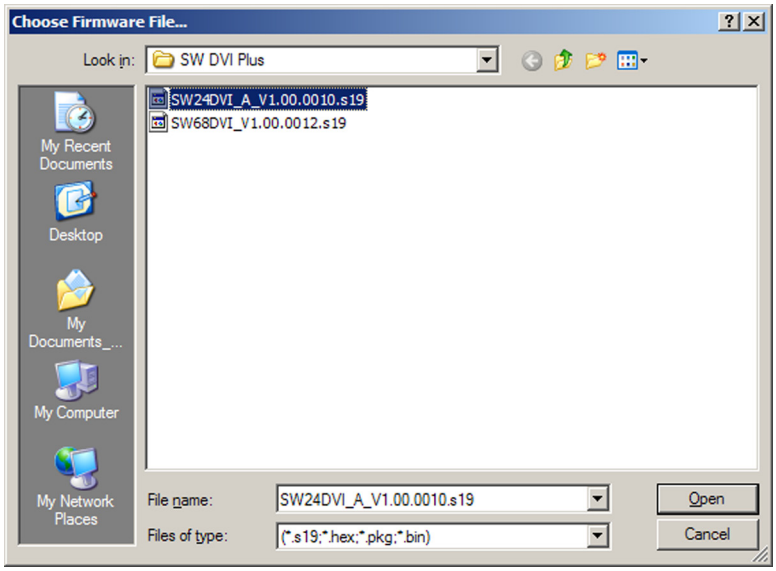
   c. On the Remove Device(s) window, select or deselect any devices on the list as desired, then click **Remove**.

   To remove all devices from the Devices field, select **Remove All Devices** from the Edit menu.

9. When finished adding or removing devices, select **Open** from the File menu on the Firmware Loader window.

10. In the Choose File window that opens, browse to locate the firmware file to be uploaded and double-click it to open it. **The file extension must be .S19.**

CAUTION *Uploading a file with an incorrect extension may cause the unit to stop functioning.*

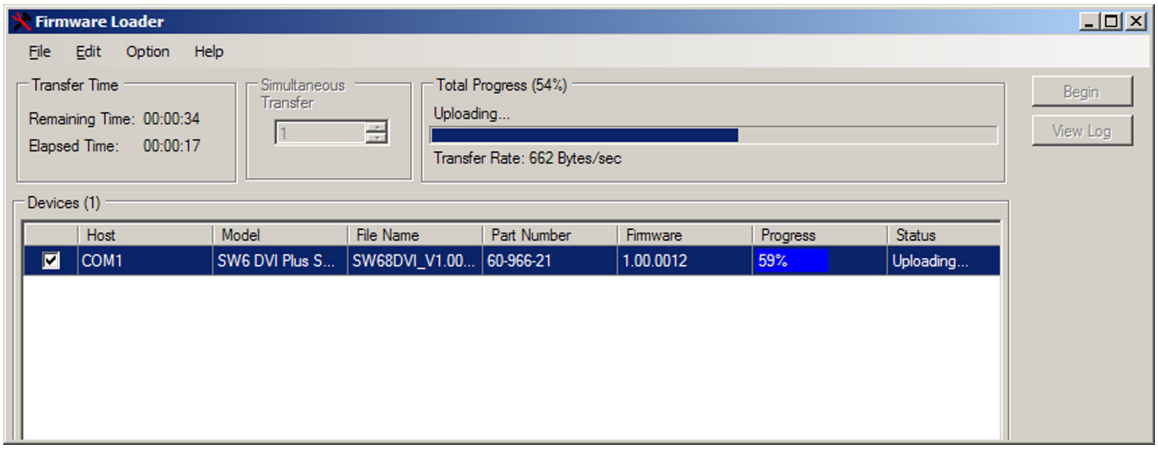


Choose file window with firmware file selected

The Choose File window closes. The firmware file name for each device is now displayed on the Firmware Loader window.

11. Click **Begin** to start the firmware uploading process.

While the firmware is being updated, a progress bar in the Total Progress field shows the status of the upload, while the Transfer Time field displays the time elapsed and the time remaining in the process. In addition, the percent of the file that has been uploaded is displayed highlighted in the Progress column until the entire firmware file is uploaded.



Firmware upload in progress

12. When the firmware update is finished, "Completed" appears above the progress bar, the Progress field displays "100%", and the Status field displays "Completed". Close the Firmware Loader window.

Appendix A

Specifications, Part Numbers, and Accessories

Specifications

Part Numbers

Specifications, Part Numbers, and Accessories

Specifications

NOTE **Appropriate DVI-D to HDMI cables or adapters are required for HDMI signal input/output.*

Video

Maximum data rate	4.95 Gbps (1.65 Gbps per color)
Maximum pixel clock	165 MHz
Resolution	Up to 1920x1200 or 1080p @ 60 Hz
Formats	RGB and YCbCr digital video
Standards	DVI 1.0, HDMI 1.2

Video input

Number/signal type	2, 4, 6, or 8 single link DVI-D (or HDMI*)
Connectors	2, 4, 6, or 8 female DVI-I
Equalization	+6 dB or +12 dB, switch selectable for each input

Video output

Number/signal type	1 single-link DVI-D (or HDMI*)
Connectors	1 female DVI-I

Audio

Gain	Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response	20 Hz to 20 kHz, ±0.05 dB
THD + Noise	0.01% @ 1 kHz at nominal level
S/N	>90 dB at maximum output (unweighted)
Crosstalk	<-45 dB @ 20 kHz; -72 dB @ 1 kHz or below
Stereo channel separation	>80 dB @ 20 Hz to 20 kHz

Audio input

Number/signal type	2, 4, 6, or 8 stereo, unbalanced
Connectors	(2, 4, 6, or 8) 3.5 mm mini audio jacks (tip = L, ring = R, sleeve = GND)
Impedance	>10k ohms unbalanced, DC coupled
Nominal level	-10 dBV (316 mVrms)
Maximum level	+8.2 dBV, unbalanced at 1% THD+N

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0dBV ≈ 2dBu*

Audio output

Number/signal type	1 stereo, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw, 5-pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Maximum level (Hi-Z)	>+16.5 dBu, balanced; >8.2 dBV, unbalanced at 1% THD+N
Maximum level (600 ohm)	>+10.4 dBm, balanced; 7.1 dBm, unbalanced at 1% THD+N

Control/remote

Serial control port
- SW2 and SW4 DVI Plus.... 1 RS-232 9-pin female D
- All other models..... 1 RS-232 3.5 mm captive screw connector, 5 pole (shared with auto switching control)

Baud rate and protocol..... 9600 baud, 8 data bits, 1 stop bit, no parity

Serial control pin configurations
- SW2 and SW4 DVI Plus.... 2 = Tx, 3 = Rx, 5 = GND
- All other models..... 1= Tx, 2 = Rx, 3 = GND

Contact closure (SW6 and SW8 DVI Plus; SW2, SW4, SW6, and SW8 DVI A Plus only)
(1) 3.5 mm captive screw connector, 5 pole (shared with RS-232)

Contact closure pin configurations (SW6 and SW8 DVI Plus; SW2, SW4, SW6, and SW8 DVI A Plus only)
Pins 4 and 5 shorted together enable auto switch mode.

IR controller module..... IR 102 Remote Control (optional)
30' maximum, 40 degrees off axis

Program control..... Extron's Simple Instruction Set (SIS™)
Extron's Universal Switcher Control/Configuration Program for Windows®

General

External power supply..... 100 VAC to 240 VAC, 50-60 Hz, external; to 12 VDC, 2 A, regulated

Power input requirements
- SW2 and SW4 models ..... 12 VDC, 0.5 A
- SW6 and SW8 models..... 12 VDC, 1.0 A

Temperature/humidity..... Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

Cooling ..... Convection, no vents

Temperature/humidity..... Storage -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
Operating +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

Mounting
- SW2 and SW4 models
  - Rack mount..... Yes, with optional rack shelf kit
    Back of the rack mountable with optional back-of-rack mounting kit
  - Furniture mount..... Yes, with optional under-desk mounting kit
- SW6 and SW8 models..... Rack mountable with included bracket kit

Enclosure type ..... Metal

Enclosure dimensions
- SW2 and SW4 models..... 1.75" H x 8.75" W x 3.0" D
  (1U high, half rack wide)
  (4.4 cm H x 22.2 cm W x 7.6 cm D)
  (Depth excludes connectors.)
- SW6 and SW8 models..... 1.75" H x 17.5" W x 8.5" D
  (1U high, full rack wide)
  (4.4 cm H x 44.4 cm W x 21.6 cm D)
  (Depth excludes connectors.)

Product weight
- SW2 and SW4 models..... 0.6 lbs (0.3 kg)
- SW6 and SW8 models..... 3.8 lbs (1.7 kg)

Shipping weight
- SW2 and SW4 models..... 2 lbs (1 kg)
- SW6 and SW8 models..... 5 lbs (3 kg)

DIM weight (SW6 and SW8 models only)
6 lbs (2.7 kg)

Specifications, Part Numbers, and Accessories, cont'd

Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
Compliances	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

Part Numbers

Included parts

These items are included with SW DVI Plus Series switcher:

Included parts	Part numbers
SW2 DVI Plus SW2 DVI A Plus SW4 DVI Plus SW4 DVI A Plus SW6 DVI Plus SW6 DVI A Plus SW8 DVI Plus SW8 DVI A Plus	60-964-01 60-964-21 60-965-01 60-965-21 60-966-01 60-966-21 60-967-01 60-967-21
12 VDC, 2 A external power supply	70-055-01
IEC power cord	
MBD 149 mounting bracket kit (SW6 and SW8 models only)	70-077-03
3.5 mm 2-pole captive screw power plug	100-454-01
(2) 3.5 mm 5-pole captive screw connectors	100-460-01
SW DVI Plus Series Setup Guide	
Extron Software Products Disk	
Rubber feet, self-adhesive (4, not attached)	

Accessories

These items are optional and may be ordered separately:

Accessories	Part numbers
IR 102 Remote Control	70-224-10
RSU 129 9.5" deep 1U Universal Rack Shelf Kit	60-190-01
RSB 129 9.5" deep 1U Basic Rack Shelf	60-604-01
RSU 126 6" deep 1U Universal Rack Shelf Kit	60-190-10
RSB 126 6" deep Basic 1U Basic Rack Shelf	60-604-10
RSF 123 3.5" deep 1U VersaTools® Rack Shelf Kit	60-190-20
RSB 123 3.5" deep 1U VersaTools Basic Rack Shelf	60-604-20
MBU 123 VersaTools Mini Under-desk kit	70-212-01
MBB 100 VersaTools Back of the Rack Kit	70-367-01

Cables and adapters

The following table lists cables and adapters that are available for the SW DVI Plus Series. For a complete listing of cables, visit the Extron Web site at **www.extron.com**.

Cables	Part numbers
DVID SL Single Link DVI-D male to male patch cables	26-585-0x
IN9700 Series DVI-D male to male extension cables	26-584-0x
DVID SL Pro cables	26-649-xx

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road, Songjiang District
Shanghai 201611
China

Asia:
Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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